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ABSTRACT

In this paper, which draws on a dissertation in process, one of the issues central to the role of content knowledge for teaching, "pedagogical content knowledge," is examined. This body of knowledge is an amalgam of pedagogy and content and makes teachers different from scholars in a field. General pedagogical knowledge is the teacher's knowledge of and skill in the use of teaching methods and other pedagogical strategies that are not subject specific. Teachers have knowledge of learners that includes student characteristics, theories of learning, and motivation. Knowledge of contexts is an important source for teachers to draw on, as well as knowledge of pedagogical aims, goals, and purposes. Teachers also use curricular knowledge, which includes knowledge of curricular materials, to teach particular topics and ideas. Two experienced secondary teachers of English were observed over a 3-month period and their classroom interactions were tape recorded and transcribed verbatum. This report provides vignettes of their teaching methods and behaviors, demonstrating how their orientation to their discipline became the foundation for the restructuring of their content knowledge for pedagogical purposes. (JD)

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PEDAGOGICAL CONTENT KNOWLEDGE:

TEACHERS' WAYS OF KNOWING

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Paper presented at the Annual Meeting of the

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Lee S. Shulman, principal investigator

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INTRODUCTION

Research on teaching has long been concerned with the knowledge base of teaching. Researchers have approached this topic from different perspectives providing important insights into a complex process. Writing in The Third Handbook of Research on Teaching Shulman (1986) describes these approaches and observes that there is a "missing paradigm in research on teaching." The missing paradigm deals with the content of teaching, that is, the knowledge teachers teach students. It raises several important questions about the nature of content knowledge for teaching: What kind of content knowledge do teachers need? Is the content knowledge for teaching different from the knowledge held by scholars in the field? What does this different way of knowing look like? How do you investigate it? All these questions address fundamental issues relating to the role of content knowledge for teaching.

The idea of the importance of subject matter knowledge in the knowledge base of teaching is not new. Dewey, writing in 1904, not only empathizes the role of subject matter knowledge in teaching, he also suggests that scholarly knowledge of the discipline is different from the knowledge needed for teaching. Dewey's words are echoing more frequently in the last two decades signalling a growing awareness among teacher educators and researchers on teaching of the importance of content knowledge in teacher education (Schwab 1970, Shulman 1974, Buchmann 1982).

In this paper we address one of the issues central to the role of content knowledge for teaching by examining the knowledge of two experienced English teachers, Naomi and Nancy. After teaching for two decades, each of these teachers has developed a body of knowledge that is different from the content knowledge in English that one would find among scholars in the field. We call this body of knowledge Pedagogical content knowledge. Using Naomi and Nancy as guides (all names are pseudonyms), we will explore some of the central features in this way of knowing that is unique to teachers.

Naomi and Nancy are subjects in a dissertation in progress. The research reported in this paper grows out of a research project The Knowledge Growth in Teaching that is currently in progress at Stanford University, School of Education[1]

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[1] The research reported in this paper was conducted under a grant from the Spencer Foundation to Stanford University for the Knowledge Growth in Teaching project. Lee S. Shulman, principal investigator.

THE MISSING PARADIGM IN RESEARCH ON TEACHING

The missing paradigm in research on teaching is being actively pursued in a research program at the Stanford University School of Education, and in several doctoral dissertations (Hashweh 1985, Baxter in progress, Gudmundsdottir in progress, Richert in progress, Grossman in progress, Wilson in progress). The Knowledge Growth in Teaching project focuses on the role of content knowledge in learning to teach. In the first year of the project we collaborated with 21 student teachers in several teacher education programs in California. Our collaborators all had a BA degree in math, science, social studies, or English. The results of the first year have been reported by Baxter, Richert and Saylor (1985), Grossman, Reynolds, Ringstaff and Sykes (1985), Gudmundsdottir, Carey and Wilson (1985) and Steinberg, Haymore and Marks (1985), and in case studies (Grossman 1985, Gudmundsdottir 1985, Reynolds 1985). In the second year we continued our collaboration with 12 of our subjects who were now qualified teachers in their first year of teaching. This work has been reported by Grossman and Richert (1986), Richert, Wilson, Marks and Shulman (1986), and Wilson, Shulman and Richert (in press).

The Knowledge Growth in Teaching project studies how teachers acquire a new understanding of their discipline for the purposes of teaching it and how that new understanding influences their teaching. We began our data collection with a series of interviews that focused on the student teachers college education, their ideas about learning, teaching and students. The data collected in the first round of interviews has been an important knowledge base for observing and documenting changes that will occur as a result of being in a teacher education program. A series of pre-observation, observation, and post-observation cycles provided important insights into how the student teachers were using and adapting their content knowledge and in the process establishing their pedagogical content knowledge.

Initially, we did not have a theoretical framework to guide our questions and observations. The aim was to come up with one (Shulman, Sykes and Phillips 1983). Two separate, yet closely related, theoretical frameworks are emerging (Shulman in press). The first one covers the knowledge base of teaching. Teachers, draw on a knowledge base in preactive and interactive teaching. We have identified in the knowledge base at least seven sources of knowledge. Content knowledge is teachers' knowledge and understanding of the subject they teach. The most important part of the knowledge base is Pedagogical content knowledge. This body of knowledge is a special amalgam of pedagogy and content and makes teachers different from scholars in the field. General pedagogical knowledge is the teachers knowledge of and skill in the use of teaching methods and other pedagogical strategies that are not subject specific. Teachers have Knowledge of learners that includes student characteristics, theories of learning and

motivation. Knowledge of contexts is an important source for teachers to draw on in teaching. An important influence on teaching is Knowledge of pedagogical aims, goals and purposes. And finally, there is Curricular knowledge which includes teachers knowledge of curricular materials to teach particular topics and ideas.

The knowledge base is the source from which teachers draw in the process of teaching. The second theoretical framework is a process model showing six aspects of pedagogical reasoning and action. The process starts with the Comprehension of a text intended for teaching. There follows a three phased Transformation process of the text: preparation, which is the critical interpretation and analysis of the text; representation which involves representing ideas in the text in the form of examples, analogies, demonstrations, and metaphors; selection which includes selection of the strategies and ideas already realized in the text; and the final phase in transformation is adaptation and tailoring, which involves adapting the text to students' characteristics.

The third process is Instruction which is the act of teaching. Then there is Evaluation which includes checking progress during teaching and after. Reflection refers to reconstructing and reflecting upon teaching. The final process is New Comprehension of the text, of teaching, of students, of self, or simply, what one learns from experience.

METHODOLOGY

The Knowledge Growth in Teaching project deals with novice teachers. This research, and several other doctoral dissertations (Baxter in progress, Grossman in progress, Richert in progress, Wilson in progress) have employed the theoretical framework emerging from the Project with experienced teachers.

In the Knowledge Growth in Teaching project we asked the following research questions: How do student teachers learn to teach their subject matter? What they know in their discipline and how do they know it? The research reported here used the same interviews and the same kinds of observations that were developed for the student teachers. It was easier to work with veteran teachers as informants. This was particularly true for questions relating to what they know in the discipline and why they do what they do in the classroom. It was possible to cover in one long interview with veteran teachers what took several interviews with the student teachers.

Nancy and Naomi are subjects in a dissertation in progress (Gudmundsdottir, in progress). They are true veterans, having taught for more than a quarter of a century each. They both teach English to 15 year old students in a Northern California

high school. Naomi was observed 20 times and Nancy 21 times over a period of 3 months. In addition we had many and important informal exchanges during the 3 intensive months I worked with them.

The first interview took place early in the field work. This interview attempted to characterize their conception of the discipline through asking about what they knew best, and why some ideas were more important in English than others. They were asked to draw a map of the field of English. In this interview the teachers described how they would teach the same content to different ability groups.

The second interview covered the course they were teaching. They were asked why they were teaching these particular novels, about the development of ideas in the course, the contribution of each literary work to the unity of the course, about assignments and other relevant topics. They were also asked about the students in the class in relation to the course they were teaching.

The final interview took place at the end of field work. It provided the opportunity to ask Nancy and Naomi questions that had arisen during the observation. The particular focus of this interview was to characterize the knowledge they had about courses and novels that was not emerging in questions about the particular course they were teaching and the particular novels they were using. They were asked about all the other ways they could think of organizing a course using the same novels, and all the other ways they could teach the novels.

Naomi and Nancy were observed 20 and 21 times respectively. Classroom interactions were tape recorded and transcribed verbatim. In addition, extensive notes were taken in classes. The field work provided massive data, about 500 pages of transcribed data (interviews and transcribed classroom interactions) and documents collected in the field. Data analysis consisted of reducing and summarizing the data and interpreting. The first part (reducing) was relatively easy and straight forward, the second was less so due to the absence of a theoretical framework.

The initial data reduction was to compile a series of vignettes for each teacher. The topics for the vignettes originated in the initial interviews and from ideas emerging from field work. The titles for the vignettes were: conceptions of the discipline; teaching that discipline to different kinds of students; students in the class; the course they were teaching; and one vignette about each of the novels they taught. The vignettes about the novels covered both ideas about the novels and teaching them. Nancy taught an advanced class and covered more novels than Naomi. Therefore, there were more vignettes about Nancy teaching novels.

The data was coded using the vignettes as coding categories. To compile each vignette, all the coded data for that vignette was collected together and further analyzed. The detailed analysis of the vignettes and the emerging theoretical framework of the Knowledge Growth in Teaching project provided further coding categories. The data was coded once more and the new coding categories became the organizing themes in the write up of the case studies.

PEDAGOGICAL CONTENT KNOWLEDGE

From the Stanford studies on the missing paradigm in research on teaching, pedagogical content knowledge is emerging as the critical unit of analysis. Next we will examine some distinctions that can be made at this initial stage in this new paradigm in research on teaching.

The content in pedagogical content knowledge

Schwab (1961/1978) has argued that within most disciplines there are several structures. This, he suggests is particularly true for the humanities and social sciences.

> First, few, if any, disciplines have a single structure. The problems of any field are usually too diverse to permit their solution by only a single pattern of enquiry. Second, the men who man the field are too diverse in their aptitudes and preferences to admit of unanimity about a one right mode of attack. Finally, even a single structure, did it exist, is not really singular. Rather, as is the case for principles as described above, a structure is a highly flexible pattern which is continually adapted and modified to fit the particular problems and situations to which it is applied. (Schwab 1961/1978:239)

Schwab identifies basically two kinds of structures within disciplines, he calls them syntactic and substantive structures. The substantive structures are made up of the conceptual devices that are used to define, bound and analyze the subject matter they investigate. Examples in literature are plot, character, and novel. In history we have chronology, revolution, monarchy, and democracy as examples of conceptual devices making up substantive structures. This kind of structure determines what scholars in the field consider their subject matter to be about and what questions should be asked of their subject. The substantive structures often precede and determine the syntactical structures by determining what scholars consider important ideas to pursue. Furthermore, the methodology scholars

use is closely tied to their ideas about the discipline.

The syntactical structures of a discipline generate new knowledge. They are

> concerned with the operations that distinguish the the true, the verified, and the warranted in that discipline from the unverified and the unwarranted (Schwab 1962).

Everyone who studies a discipline will encounter these structures. The historian takes courses on Marxist history, political history, or social history; the English scholar takes courses on poetry, drama, the short story, British literature, Romanticism, structuralist literary analysis and so on. Moreover, most people end up specializing within their discipline. That means they study at greater depth a few substantive and syntactic structures. This kind of specialization gives rise to different conceptions of the subject matter. In Nancy's and Naomi's case, their conception of the subject matter can be characterized as an orientation to the discipline. Grossman, Reynolds, Ringstaff and Sykes (1985) suggest that "an orientation includes the content, (what one knows)" which are aspects of substantive structures, "sources of evidence, (how one knows it)," which are aspects of syntactical structures, and "organization, (how the knowledge is organized)" which includes aspects of both syntactical and substantive.

Grossman et al. (1985) identify three orientations in English: text, context, and reader. The textual orientation focuses on the text. Since this two of those orientations are relevant for Nancy and Naomi, we will look at how Grossman et al. (1985) describe them. First, there is the textual orientation.

> The text centered orientation is perhaps the most traditional orientation towards literature. In this orientation, one may know periods of literature, major authors within periods, and individual texts. The sources of evidence exist within the text itself and the reader may use the traditional tools of literary analysis to understand texts. (Grossman et al. 1985:7- 8)

They also describe a reader orientation.

> In a reader orientation, the meaning of a text depends upon the individual reader. Knowledge of a text is idiosyncratic, tied to the personal experiences of the reader. In this orientation, the evidence for the interpretation of texts resides in personal experience. Personal responses assume

> priority over literary analysis. (Grossman et al. 1985:7-8)

Nancy has a textual orientation to literature as a scholar and teacher of English. This is particularly apparent in her use of the traditional tools of literary analysis to understand texts. She tends to look for evidence in texts. Naomi on the other hand has a reader orientation to literature. She feels that literature should relate to people's realities and each piece of literature appeals differently to different persons. Therefore, every person's interpretation of texts is valid as long as it means something to them.

Scholarly content knowledge is not always appropriate for teaching. Some kind of restructuring is required for the purposes of teaching, and in the case of Nancy and Naomi, their orientation to literature is the basis for their pedagogical content knowledge.

Restructuring content knowledge

Pedagogical content knowledge is a way of knowing that is different from content knowledge. Dewey (1904/1964) describes this way of knowing as the:

> Mastery of subject matter from the stand point of its educational value and use. (Dewey (1904/1964:318)

Mastery of the discipline for educational purposes involves two issues central to teaching: the reorganization of content for teaching and the teaching skills by which content is transmitted. Buchmann (1986) argues that teachers have obligations towards the discipline they teach that relate both to the organization of content and teaching methods. This means that in reorganizing content for teaching, teachers have to recognize and respect the constraints imposed by the structure of the discipline. Teachers should not replace the structure of the discipline with other structures that are alien to it (Schwab 1961/1978).

As English students in college, Naomi and Nancy probably studied the discipline in the community of scholars whose primary obligation was to the maintenance of the discipline. When they started teaching, they had to learn, or invent, a structure that made it possible to communicate their knowledge and understanding (including syntactical and substantive structures) to different groups of students.

In restructuring the discipline for teaching teachers not only have to recognize and respect the particular structure, or orientation, they prefer, they also have to provide students with alternative views. Nancy and Naomi both have done so. They have come up with theoretical models of English that serve as

organizers for their approach to teaching all literature and as generators of alternative views that they call stories. First we will see Nancy's account of her model for teaching English. This model is the centerpiece of her pedagogical content knowledge in English. Nancy did not draw a diagram of her model, instead she described it verbally.

> Basically I break reading skills into four levels. Level one is simply translation. It is understanding the literal meaning, denotative, and frequently for them that means getting a dictionary as they did with Scarlet Letter.
>
> Level two is connotative meaning and again you are still looking at the words. "What does that mean? What does that tell us about the character?" We looked at the Scarlet Letter. He described a rose bush in the first chapter. Literal level is: "What is a rose bush? More importantly what does a rose bush suggest? What is it that comes to mind, what did you picture?"
>
> Level three is the level of interpretation. In Moby Dick the example I used in class was the boots. The boots would be the literal level. What does it mean when he gets under the bed? And the students would say: "He is trying to hide something." Level three would be: "What does Melville say about human nature? What is the implication of this? What does this tell us about this character?"
>
> Level four is, application and evaluation and I try as I teach literature to get the students to level four. That is where they take the literature and see how it has meaning for their own lives. Where would we see that event occur in our own society? How would people that we know be behaving if they were doing what these characters are doing? How is this piece of literature similar to our common experiences as human beings? My view of reading is basically to take them from a literal meaning on the page to making it mean something in their lives. [Interview 1.3-1.4]

Naomi has a model of English for teaching that is also the centerpiece of her pedagogical content knowledge. She drew a diagram of her model (see figure 1). Next, she describes the diagram.

> In the core we are looking at English per se.
>
> In the first circle you really have to begin with some ability to understand the language, like "I smelt the night."
>
> In the second circle, once you have gotten to the point where you can understand the language you begin to look for deeper significance of what the language literally is saying.
>
> In the third circle: what else does it say? That becomes the multiple interpretations that to me make up literature. When you are looking at multiple interpretations I am literally saying to a student that I personally believe that an author would say: Fine Mrs. S, fine John, my work has touched you both, yet we both have interpreted it as it touches us as individuals. His interpretation - because it meant something to him - is as important to him as my interpretation and it is not necessary that we totally agree. [Interview 1.4]

Those models are not static structures. Instead, they are dynamic and constantly evolving. This is not surprising since as teachers Nancy and Naomi are in a daily interaction with students through the discipline which they teach five periods a day. This they have been doing for two decades. During that time, they have had to organize courses, teach new novels, and figure out new and more interesting ways to teach old novels. These tasks have made them think creatively in terms of using their models, and the purpose of English in the life of youngsters. The models have become generators of alternative views about the content they have been teaching. Consequently, Naomi's and Nancy's models have generated a repertoire of ways of thinking about courses and novels. We are want to suggest the metaphor "story" to describe the process by which teachers transform their Pedagogical content knowledge into something they can teach students. A story is a way of approaching the novel and making sense of it for the purposes of teaching. Veteran teachers realize many stories in the literary works they use. This refers to both a course of study and individual novels[2]. Here, Nancy describes the different stories that can be told through a course in American literature using the same literary works that she had selected for her class.

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[2] I may well be that the metaphor of story applies only to narrative disciplines like English and history.

First, there is American literature with a historical focus.

> One way of teaching American literature is to teach it with a focus on history and read the Scarlet Letter as a description of what life was like in the Puritan England. [Interview 5.14]

The second story is philosophical.

> You could do these as philosophy and romanticism and study the development of European romanticism and its influence on American ideas. [Interview 5.14 - 5.15]

The third story is a survey of American literature.

> One way of teaching this is the way it is taught in a college class. I took a survey of American literature. This class focussed on the writers, who they were and when they were born, what their lives were like, and what types of literature they wrote and when we read the literature. We tended not to talk so much about the ideas, as much as "how this work of literature was characteristic of Hemingway or Steinbeck or Twain. Or, what Twain was trying to do and how his writing style differed from his predecessors and how he might have been influenced by someone before him. [Interview 5.15]

The fourth story is psychology where the focus is on characters as psychological types. The fifth story is about symbolism. Nancy does not like that approach, and she explains why.

> Students talk about lots of little details. The details never go beyond details, they tend to focus on "what does the water symbolize in the first chapter? What does the purple scar symbolize in the chapter? [Interview 5.16]

The sixth story is mythology.

> You can teach Scarlet Letter and Moby Dick and some of the early American literature in terms of American legends. [Interview 5.16]

Veteran teachers like Nancy and Naomi have taught the same novels over and over again to all kinds of students in all kinds of of courses. This has made them see different stories in the novels.

Naomi explains some of the stories she sees in an American classic Huckleberry Finn, or Huck Finn, as she calls it.

The first story is Twain's literary technique as it appears in Huck Finn.

> In this approach I would be dealing much more with the structure of the novel. How does Twain build Huck as a literary character from the beginning of the book to the end of the book? Why does he choose the incidents that he does, and the order of them?
>
> Because when he gets to a point where Huck sees Jim as a person he puts Huck back to the Huck of the early part of the novel, and then Huck is being tested. How strong really is his feeling towards Jim?
>
> So Twain makes makes those ridiculous incidents occur and each one elevates Jim as a person and diminishes the Duke and the Dauphine. [Interview 4.4]

The second story is about a boy coming of age.

> In the very beginning I would concentrate on his life with the widows and what he is learning about life through them that is very different from what he has learned from his father. Then he is thrown back into a situation where his Dad comes back and he begins to see that some of the things his father says aren't acceptable to him either. [Interview 4.5]

The third story is about the relationship between a boy and a man who happens to be black.

> In this approach I'm asking the students to see Huck and Jim moving along together. They begin to know and understand each other. Jim understands Huck's needs, this lonesome little boy. He has a father who does horrible things to him. Huck begins to understand Jim in a way he would never have understood him if they were back at the beginning. The student is literally going with them all the way. The student is beginning to see all of this unfold, this very strange relationship. [Interview 4.7-4.8]

The fourth story is about man's humanity to man. This is the approach Naomi uses with her class. It is important to note that she includes in this approach elements from all the other stories she describes above.

All these stories, that pedagogues like Nancy and Naomi read in a piece of text or a selection of novels in a course of study, show that they approach their subject matter with multiple perspectives in mind, something they share with the scholar of English. This between pedagogy and scholarship tends not to get sufficient attention in the treatments of pedagogy by teacher educators and researchers on teaching. In addition to reading texts with multiple perspectives, the teacher is concerned with, what we call, selection, adaptation and tailoring, with those aspects of the multiple perspectives that lead to powerful forms of bridging the gap between what students know and what teachers want them to know and understand. Schwab (1971) this skill "polyfocal conspectus," and it is his example of what educators need to do in order to understand something for teaching.

The pedagogical in pedagogical content knowledge

While the content in pedagogical content knowledge refers to the organization of the subject matter, the pedagogical refers to the skills regarding the transmission of content knowledge organized for teaching.

Schwab (1961/1978) warns us that the teaching methods we use and the learning approach we promote are an integral part of knowledge. He talks about three kinds of skills that are important in teaching the disciplines if the approach is not to be alien to the structure of the discipline. Schwab explains those three skills.

> First ... are the skills by which one applies the truths learned from a discipline. Second, there are the skills of enquiry itself. In their primary use, these are the skills by which the master of a discipline contributes new knowledge to that discipline. But secondarily, they are the skills by which secondary enquiry (enquiry into enquiry) is conducted. By "enquiry into enquiries" I mean the kind of study which is involved in an "inductive" approach to the structure of a discipline, learning the structure by study of instances of it. ... [T]hese are the skills which lead to <u>critical</u> understanding of knowledge.
>
> Third, there are the skills of reading and interpretation by which one discovers the meanings of statements which are embedded in a context of structure. (Schwab 1961/1974:236-237)

According to Schwab, the first skill is employed by researchers in the discipline and along with the second skill, these are usually called "application of principle" and "interpretation of

data." These are the skills that lead to a critical understanding of knowledge and an understanding of the process by which scholars come to their conclusions. The third skill refers to discovering structure in the text, and is less common in education.

Nancy and Naomi both have developed a teaching skill to teach their models, in the manner that Schwab describes. Nancy uses her levels as scaffolds (Bruner 1960) that are constructed around buildings for workers to move up, down, and around, to do their work. The levels are scaffolds in the sense that she consciously moves from one level to another, up or down, to help students build their understanding of literature. This is evident from the questions she asks in class. These questions can be analyzed using her four levels of reading.

In 21 observations Nancy asked students a total of 205 questions. Most of these questions are level one (46%) and three (36%) (see table 1). These numbers, however, do not tell the whole story. Many of the level three questions are group assignments that last a whole period. For example, students were to figure out the different views of Ahab (the captain in Moby Dick) in the first chapters.

Nancy never lectures on how a piece of text should be interpreted. Instead she raises scaffolds around the text, using her levels, and has the students moving up and down, explicitly. Next, is a typical exchange from a class where they were interpreting Moby Dick.

Teacher ... Queequeg goes under the bed to put on his shoes. Remember the levels of reading.

Student 1 It is so unusual.

T Level one is: What does he do? He hides his feet. Next, why? What does it mean? Amy?

S 2 The feet must be regarded special in his culture?

T Maybe private, personal, special, or sacred. ... He is going to be polite. Now, level three is: What is Melville trying to show that suggests some kind of cultural difference? Americans experience this particularly if you have travelled. ... What you need to be doing next for level four is to relate this to your own experience. [Observation 4.3]

In terms of Schwab's skills, Nancy is inductively leading students through a process where she helps them discover structure in the text. Teaching novels without telling students exactly how to interpret them requires the skills Schwab describes above. It is not the first skill that Schwab describes, since Nancy is not trying to turn her teenagers into

English scholars. Her inductive approach to teaching and the application of her model to novels have important elements of the second and third skills that Schwab describes. Learning literature to her is not to regurgitate someone else's interpretation, but to engage in the process of interpretation. It is important to note that Nancy forbids her students to use guides to the interpretation of literature (Cliff notes).

Naomi's model has generated a different pedagogical strategy, one that helps students focus on personal meaning. She has developed a technique that we are calling "circling" to teach a reader orientation to literature.

The circling technique is based on her model of English. It has three phases that are parallel to the model. The first phase relates to the first circle in the model: understanding the language. It involves clarifying the text and getting the literal meaning of the words on the page, and making sure students understand the words and the plot. The second phase of circling is like the second circle in her model of English: interpretation and involves students realizing the significance of the text. The third phase of the circling process is parallel to the third circle in the model, multiple representations and what they mean for students, and involves students using the understanding of the text to examine their own predicament. In the circling process, the primary focus is on this last phase. Most of the time Naomi circles several times giving students the opportunity to add layer upon layer of meaning that is a unique mixture of the personal and textual.

Naomi's circling process is related to Nancy's levels of meaning (see figure 2). The first phase of the circling process is like Nancy's first level: the literal meaning of text. Naomi does not have a phase that deals with the issues Nancy is concerned with in her second level. Naomi's second phase, however, is like Nancy's third level: interpretation. The third phase is like Nancy's fourth level: students relating literature to their lives and reality.

Since Nancy's model is particularly relevant for analyzing questions and because it covers the approach to teaching for both Naomi and Nancy, it can be used to analyze the questions Naomi was observed asking in class. All the non-rhetorical questions Naomi asked students about literature (she also asked many rhetorical questions) were categorized using Nancy's four levels, a total of 334 questions (see table 2). 25% are level one questions, 8% level two, 27% level three, and 40% level four.

Table 2 shows that the high number of level four questions comes from a relatively few classes. These were the classes where they discussed important events from Huck Finn. The transcribed classroom data shows that Naomi was engaging the students in a process of circling. The high number of level four questions also shows her that questions encourage students to

examine their predicament in light of the literature they are reading.

Naomi asks the fewest questions about language (8%), that is Nancy's level two. These kind of questions dwell on language in ways that Naomi does not consider appropriate for general students since they, in her view, do not have the patience or motivation to linger over the connotative meaning of words. The table shows that Naomi makes sure they get the meaning of the words (25% level one questions), then interpret that meaning (27% level three questions), to be able to spend more time and energy examining their own lives in light of an understanding gained from the text (40% level four questions). This is also the questioning pattern that characterizes circling.

In this excerpt we join a discussion where Naomi already has asked a series of level one questions. We begin where she asks a level two question, followed by a level four. Then we watch her circle from the text to their lives using alternatively level two and three questions on one hand, and level four on the other.

Teacher When do we hear [the owl and the wolf]? When there is night and it is very still. Lets for a moment imagine there is nobody around and forget you are in a classroom, and it is dark, pitch black night and it is very, very quiet. And then you hear "uh, uh," it is that soft "uh-ing" of an owl. What kind of feeling is that supposed to convey to us? [Level two question]

Student 1 Airy.

S 2 Scary.

S 3 Gloom.

S 4 Spooky.

T Repeat those words.

S's ...

T In just one sentence what does that tell us about Huck's feelings? ... You are in a dark place and there is nobody around and you hear a noise, what do you bodily tend to do? [Level four]

S 2 Jump.

S 4 Frightened.

T Depends on how dark it is and how lonely you feel, your heart begins to pound. When we are in that kind of situation - are you comfortable in the dark, airy kind of setting? [Level four]

S 4 You magnify everything.

T Yes, it tends to amplify everything. ... What about wolf sounds? [Level two]

S 2 Loneliness.

T Wolfs tend to travel in packs, but the lone wolf? [Level two]

S 2 They howl because they are lonely and they are calling the pack.

T Why is that in the story? [Level three]

S 2 He is with his Dad.

S 4 His Dad is not any help awake or asleep.

T "I'm alone in spite of my Dad." All of a sudden the sheer understanding of "I'm all alone." My Dad may be here, but I'm alone. Have you ever felt that way? [Level four]

S 5 Yes, when you have the house all to yourself.

T What do you hear? [Level four]

S 5 All kinds of noises.

S 4 You feel helpless.

T You want to know whom to reach out to and there isn't anyone there. You can now imagine how Huck felt, not only is he feeling a sense of loneliness, but he has nobody to reach out. When you reach out for help, what kind of feeling do you get? [Level four]

S 5 Security. [Observation 8.2 - 8.3]

Naomi's and Nancy's models and teaching techniques may look like personal preference, but they are not. The two teachers have restructured their orientation to the discipline in such a way that the structure they have come up with is not alien. They have also figured out a teaching method to teach their preferred orientation that does justice to the discipline and the orientation to which they subscribe. Naomi and Nancy recognize their obligation as teachers to the discipline. This does not mean that they neglect their students. It simply means that they have taken their obligation as teachers of English seriously and they have figured out a way to communicate effectively their particular view of the discipline to students.

Nancy and Naomi are excellent teachers each in her own way. They are not only excellent because they care about students or are good women. They are excellent teachers because they have respected their obligation to their discipline -- because they teach English in the way they see English.

CONCLUDING REMARKS

The scholarly background of Naomi and Nancy has given them an orientation to the discipline. This orientation becomes the foundation for their restructuring of their content knowledge for pedagogical purposes. The content knowledge is restructured by establishing a model. This model generates multiple views of texts a process similar to what scholars in the field engage in. But teachers have to go beyond merely generating multiple perspectives, they have to think of these perspectives in terms of teaching them to students.

In the case of Nancy and Naomi, the models they have invented generate teaching methods that effectively transmit their view of the discipline. From the questions they ask students in class, we can see that they actively engage students in a process that is true to the orientation they subscribe to.

This study shows that veteran teachers, like Naomi and Nancy have a rich and well organized body of knowledge in their subject matter. We have called this body of knowledge Pedagogical content knowledge. There is no indication that they were taught to organize their content knowledge that way. Instead, they invented those models themselves. This has implications for research on teaching: this is an important topic and there is a great deal to be learned about effective teaching by studying the ways in which veterans organize their content knowledge for teaching. Let us hope that when The Fourth Handbook of Research on Teaching appears sometimes in the not too distant future there will no longer be the need to talk about the missing paradigm in research on teaching.

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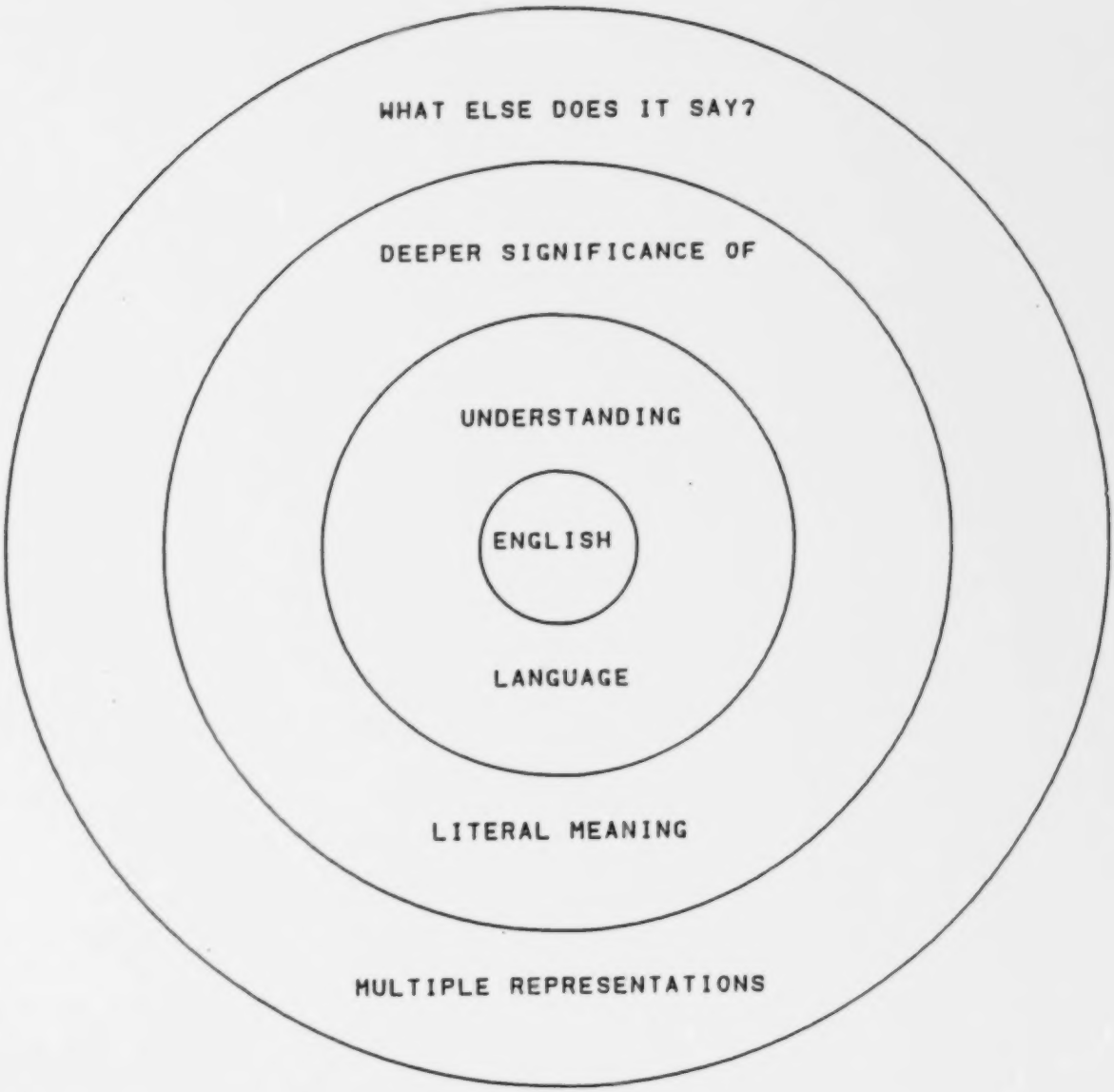

FIGURE 1 - NAOMI'S MODEL OF ENGLISH.

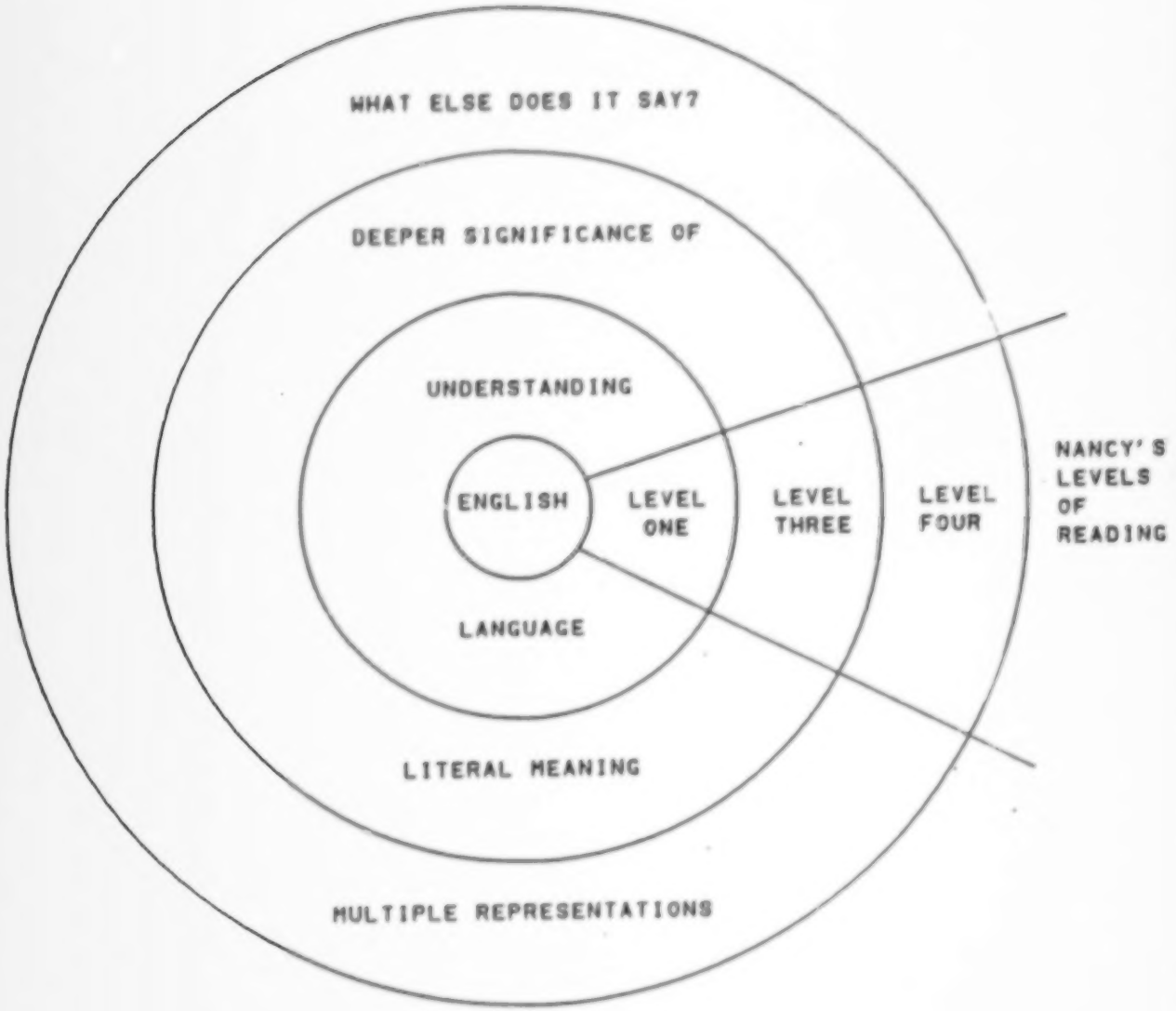

FIGURE 2 - RELATIONSHIP BETWEEN NAOMI'S AND NANCY'S MODELS OF ENGLISH.

Table 1 - Analysis of questions Nancy asks in class using her levels of reading.

OBSERVATIONS	LEVEL I	II	III	IV	EXPLANATIONS
1	16	0	1	4	Bartleby
2	8	0	5	5	
3	6	0	0	0	Moby Dick
4	13	4	7	0	
5	0	0	9	0	No voice
6	5	0	5	0	
7	13	0	9	0	
8	0	0	6	0	Working in rows
9	8	0	1	0	
10	0	1	13	0	Discussion Ahab
11	0	0	0	0	Students questions
12	0	0	0	0	Test
13	0	0	0	0	Movie
14	3	0	23	0	
15	0	0	0	0	Test review
16	0	0	0	0	Essey review
17	3	0	4	7	Huck Finn
18	5	2	13	0	
19	3	0	6	4	
20	3	0	2	0	
Total	86	7	104	20	(217)
Percent	40	3	48	9	(100)

Table 2 - Analysis of questions Naomi asks in class using Nancy's levels of reading.

OBSERVATIONS	LEVEL I	II	III	IV	EXPLANATIONS
1	0	0	0	0	Vocabulary
2	0	0	0	15	
3	2	0	11	9	
4	2	4	4	21	Predjudice
5	8	1	0	9	Character
6	0	0	0	0	Vocabulary
7	19	2	10	14	Character
8	1	6	3	4	Key event
9	0	0	0	0	Vocabulary
10	2	10	1	1	
11	17	0	5	2	
12	0	0	8	10	
13	5	2	3	0	
14	0	0	1	0	Groupwork
15	9	0	12	0	
16	8	0	1	0	
17	0	0	1	0	
18	12	1	6	23	Key event
19	1	2	25	17	Character
20	13	0	0	7	Key event
Total	99	28	91	132	(348)
Percent	28	8	26	38	(100)